

# **EXHIBIT K**

U.S. Patent No. 10,102,449	
Claim 1	Exemplary Infringement Evidence <sup>1</sup>
[1PRE] A system for autonomous device operating, the system comprising:	<p>To the extent the preamble is limiting, each autonomous Tesla vehicle with Software Version 9.0 and beyond (this includes vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with the Dojo super computer meet the limitations of the claimed system.</p> <p>The discussion and evidence cited in claims [17PRE-D] are incorporated herein.</p>
[1A] one or more processor circuits;	<p>To the extent the preamble is limiting, each autonomous Tesla vehicle with Software Version 9.0 and beyond (this includes vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with the Dojo super computer comprise</p> <p>The discussion and evidence cited in claims [17PRE-D] are incorporated herein.</p> <p>Each of the accused Tesla vehicles (Models 3, S, X, Y, etc.) includes one or more processors (e.g., the full self-driving chip) programmed by code stored on one or more non-transitory machine readable media (i.e. RAM memory, SSD drive, flash memory, hard drive, etc.) all part of Tesla full self-driving computer.</p> <div data-bbox="590 855 1776 1180" data-label="Image"> </div> <p>See Tesla Autonomy Day 2019 video <a href="https://www.youtube.com/watch?v=-b041NXGPZ8">https://www.youtube.com/watch?v=-b041NXGPZ8</a> at 7:11 (Tesla full self driving computer) and at 10:22 (Tesla full self driving chip).</p>

<sup>1</sup> These infringement contentions are prepared with publicly available information.

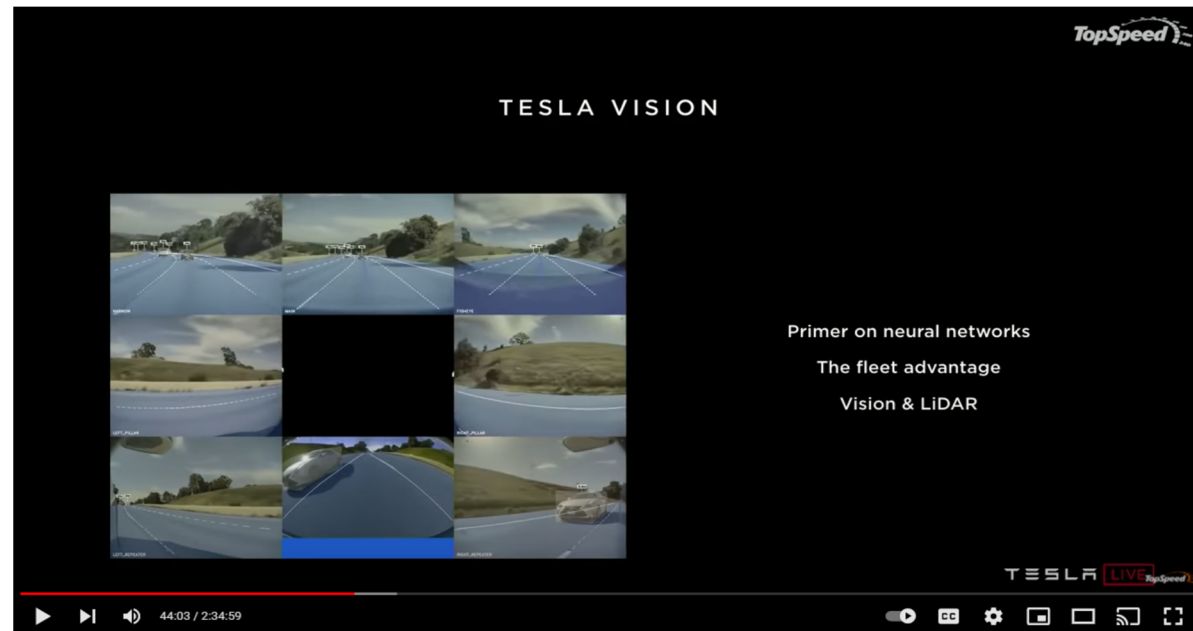
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	<p><b>How does Autopilot work?</b></p> <p>As of mid-February 2022, all vehicles built for the North American market will feature Tesla Vision, which uses eight cameras and powerful neural net processing to see the environment around the car and deliver Autopilot features. This camera suite provides occupants with an awareness of their surroundings that a driver alone would not otherwise have. A powerful onboard computer processes these inputs in a matter of milliseconds to help make driving safer and less stressful.</p> <p>See <a href="https://www.tesla.com/support/autopilot">https://www.tesla.com/support/autopilot</a></p>
[1B] a memory that stores at least a first one or more digital pictures correlated with a first one or more instructions sets for operating a first physical device, wherein the first physical device includes an actuator for moving at	<p>To the extent the preamble is limiting, each autonomous Tesla vehicle with Software Version 9.0 and beyond (this includes vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with the Dojo super computer comprise</p> <p>The discussion and evidence cited in claims [17A] are incorporated herein.</p>

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least a portion of the first physical device, and wherein at least a portion of the first one or more digital pictures or at least a portion of the first one or more instruction sets for operating the first physical device are learned in a learning process that includes operating the first physical device at least partially by a user;	
[1C]an optical camera that captures	To the extent the preamble is limiting, each autonomous Tesla vehicle with Software Version 9.0 and beyond (this includes vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with the Dojo super computer comprise an optical camera that captures digital pictures.

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digital  
pictures; and

For example, as a driver drives a first Tesla vehicle the processor of the first Tesla vehicle receives from the vehicle's cameras (optical camera) the pictures depicting the vehicle's surrounding (i.e. pedestrians, other vehicles, roads, buildings, etc.).

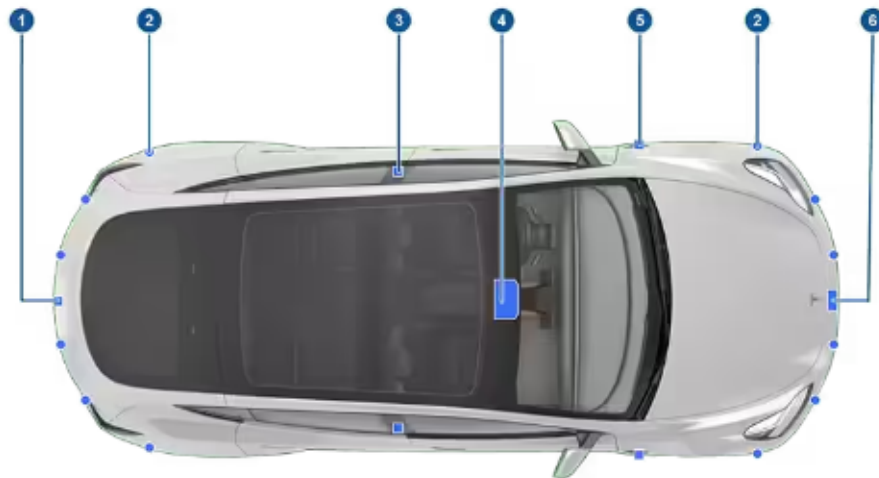


See Tesla Autonomy Day 2019 video <https://www.youtube.com/watch?v=-b041NXGPZ8> at 44:00 (a stream of videos from eight cameras across the vehicle used to make a lane change).

Further, the Model Y (an accused vehicle) has multiple cameras to depict a portion of the vehicle's surrounding.

## How It Works

Your Model Y includes the following components that actively monitor the surrounding area:



1. A camera is mounted above the rear license plate.
2. Ultrasonic sensors (if equipped) are located in the front and rear bumpers.
3. A camera is mounted in each door pillar.
4. Three cameras are mounted to the windshield above the rear view mirror.
5. A camera is mounted to each front fender.
6. Radar (if equipped) is mounted behind the front bumper.

Model Y is also equipped with high precision electronically-assisted braking and steering systems.

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	<p><i>See <a href="https://www.tesla.com/ownersmanual/modely/en_us/GUID-EDA77281-42DC-4618-98A9-CC62378E0EC2.html">https://www.tesla.com/ownersmanual/modely/en_us/GUID-EDA77281-42DC-4618-98A9-CC62378E0EC2.html</a></i></p> <p>The discussion and evidence cited in claims [17PRE-D] are incorporated herein.</p>
[1D] an artificial intelligence unit that: receives a new one or more digital pictures from the optical camera;	<p>To the extent the preamble is limiting, each autonomous Tesla vehicle with Software Version 9.0 and beyond (this includes vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with the Dojo super computer comprise a system with an artificial intelligence unit a system that can receives a new one or more digital pictures from the optical camera.</p> <p>The discussion and evidence cited in claims [17A-C] are incorporated herein.</p>
[1F] anticipates the first one or more instruction sets for operating the first physical device based on at least partial match between the new one or more digital pictures and the first one or more digital	<p>To the extent the preamble is limiting, each autonomous Tesla vehicle with Software Version 9.0 and beyond (this includes vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with the Dojo super computer comprise an artificial intelligence unit that can anticipate the first one or more instruction sets for operating the first physical device based on at least partial match between the new one or more digital pictures and the first one or more digital pictures, wherein the anticipates includes at least one of: uses the one or more processor circuits to execute the first one or more instruction sets for operating the first physical device, wherein the causes is performed in response to the anticipates of the artificial intelligence unit, and wherein the first physical device or a second physical device autonomously performs one or more operations defined by the first one or more instruction sets for operating the first physical device.</p> <p>The discussion and evidence cited in claims [17A-C] are incorporated herein.</p>

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pictures,  
wherein the  
anticipates  
includes at  
least one of:  
determining  
that a number  
of at least  
partially  
matching  
portions of  
the new one  
or more  
digital  
pictures and  
portions of  
the first one  
or more  
digital  
pictures  
exceeds a  
threshold  
number, or  
determining  
that a  
percentage of  
at least  
partially  
matching  
portions of  
the new one  
or more



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digital pictures and portions of the first one or more digital pictures exceeds a threshold percentage; and	
[1G] causes the one or more processor circuits to execute the first one or more instruction sets for operating the first physical device, wherein the causes is performed in response to the anticipates of the artificial intelligence	<p>To the extent the preamble is limiting, each autonomous Tesla vehicle with Software Version 9.0 and beyond (this includes vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with the Dojo super computer comprise an artificial intelligence unit that can cause the one or more processor circuits to execute the first one or more instruction sets for operating the first physical device, wherein the causes is performed in response to the anticipates of the artificial intelligence unit, and wherein the first physical device or a second physical device autonomously performs one or more operations defined by the first one or more instruction sets for operating the first physical device.</p> <p>The discussion and evidence cited in claims [17D-E] are incorporated herein.</p>

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unit, and wherein the first physical device or a second physical device autonomously performs one or more operations defined by the first one or more instruction sets for operating the first physical device.	
<b>Claim 17</b>	<b>Exemplary Evidence</b>
[17PRE] A method comprising:	<p>To the extent the preamble is limiting, each autonomous Tesla vehicle with Software Version 9.0 and beyond (this includes vehicles with enhanced autopilot and/or full self-driving (FSD)) alone or together with the Dojo super computer meet the limitations of the claimed system.. performs this method.</p> <p>The discussion and evidence cited in claims [17A-D] are incorporated herein.</p>
[17A] (a) accessing a memory that stores at least a first one or more digital	The Tesla vehicles can (a) accessing a memory that that stores at least a first one or more digital pictures correlated with a first one or more instructions sets for operating a first physical device, wherein the first physical device includes an actuator for moving at least a portion of the first physical device, and wherein at least a portion of the first one or more digital pictures or at least a portion of the first one or more instruction sets for operating the first physical device are learned in a learning process that includes operating the first physical device at least partially by a user, the accessing of (a) performed by one or more processor circuits.

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pictures correlated with a first one or more instructions sets for operating a first physical device, wherein the first physical device includes an actuator for moving at least a portion of the first physical device, and wherein at least a portion of the first one or more digital pictures or at least a portion of the first one or more instruction sets for operating the first physical

For example, each of the accused Tesla vehicles in the Tesla fleet (Models 3, S, X, Y, etc.) includes one or more processors (e.g., the full self-driving chip) programmed by code stored on one or more non-transitory machine readable media (i.e. RAM memory, SSD drive, flash memory, hard drive, etc.) all part of Tesla full self-driving computer.



See Tesla Autonomy Day 2019 video, available at <https://www.youtube.com/watch?v=-b041NXGPZ8> at 7:11 (Tesla full self driving computer) and at 10:22 (Tesla full self driving chip).

The processor of the Tesla vehicle (the claimed “physical device”) accesses its memory that stores at least a knowledgebase that includes a first circumstance representation (e.g., representation of pedestrians, other vehicles, roads, buildings, etc.) correlated with a set of driving instructions (e.g., driving instructions for effecting speed, steering, breaking, trajectory, etc.; the claimed “first one or more instruction sets”) for operating a first Tesla vehicle (the claimed “first device”).

Further, each of the accused Tesla vehicles in the Tesla fleet (Models 3, S, X, Y, etc.) includes a motor (**the claimed actuator**) for moving the car. For example, the Model Y includes rear motors on all models and front motors on AWD models.

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device are learned in a learning process that includes operating the first physical device at least partially by a user, the accessing of (a) performed by one or more processor circuits;

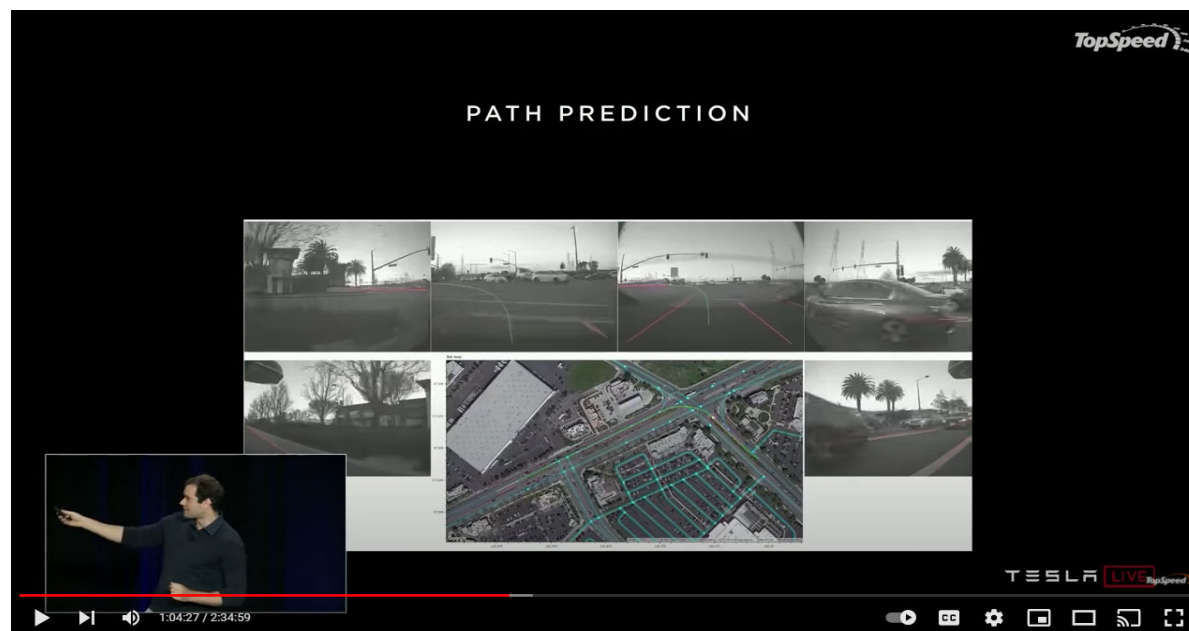
## Motor Type(s)

Rear motor: AC permanent magnet synchronous motor, liquid-cooled, with variable frequency drive.

Front motor (AWD vehicles): AC induction motor, liquid-cooled, with variable frequency drive.

See [https://www.tesla.com/ownersmanual/modely/en\\_cn/GUID-E414862C-CFA1-4A0B-9548-BE21C32CAA58.html](https://www.tesla.com/ownersmanual/modely/en_cn/GUID-E414862C-CFA1-4A0B-9548-BE21C32CAA58.html)

Further, as the driver drives the first Tesla vehicle (**the claimed “first physical device”**), the processor of the Tesla vehicle receives a set of driving instructions (i.e. driving instructions for effecting speed, steering, breaking, trajectory, etc.; **the claimed “first one or more instruction sets . . . learned in a learning process that includes operating the first physical device at least partially by a user”**) that the driver used to navigate the vehicle’s surrounding.

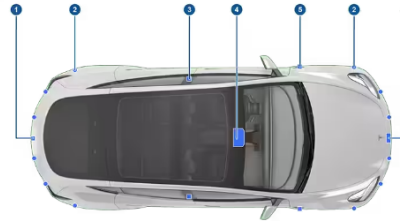


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	<p>See Tesla Autonomy Day 2019 video, available at <a href="https://www.youtube.com/watch?v=-b041NXGPZ8">https://www.youtube.com/watch?v=-b041NXGPZ8</a> at 1:04:10 (“While you are driving a car [<b>the claimed “first physical device”</b>] what you're actually doing is you are annotating the data because you are steering the wheel. You're telling us how to traverse different environments so what we're looking at here is some person in the vehicle who took a left through an intersection and what we do here is we have the full video of all the cameras and we know that the path that this person took because of the GPS, the inertial measurement unit, the wheel angle, the wheel ticks, so we put all that together and we understand the path that this person took through this environment [<b>the learning of instructions</b>]. And then of course we can use this for supervision for the network so we just source a lot of this from the vehicle, we train a neural network on those trajectories, and then the neural network predicts paths just from that data. ... we're taking human trajectories from the real world we're just trying to imitate how people drive in real worlds.”)</p> <p>See also Tesla AI Day 2021 video, available at <a href="https://www.youtube.com/watch?v=j0z4FweCy4M">https://www.youtube.com/watch?v=j0z4FweCy4M</a> at 2:55:29 (all the human drivers are essentially training the neural net as to what is the correct course of action [<b>the claimed driving instructions</b>])</p>
[17B] (b) receiving a new one or more digital pictures from an optical camera, the receiving of (b) performed by the one or more processor circuits;	<p>The one or more processing circuits within the Tesla vehicle can receive a new one or more digital picture form an optical camera.</p> <p>For example, the Model Y, one vehicle within the Tesla vehicle, includes multiple cameras (<b>the claimed optical camera</b>).</p>

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**How It Works**

Your Model Y includes the following components that actively monitor the surrounding area:

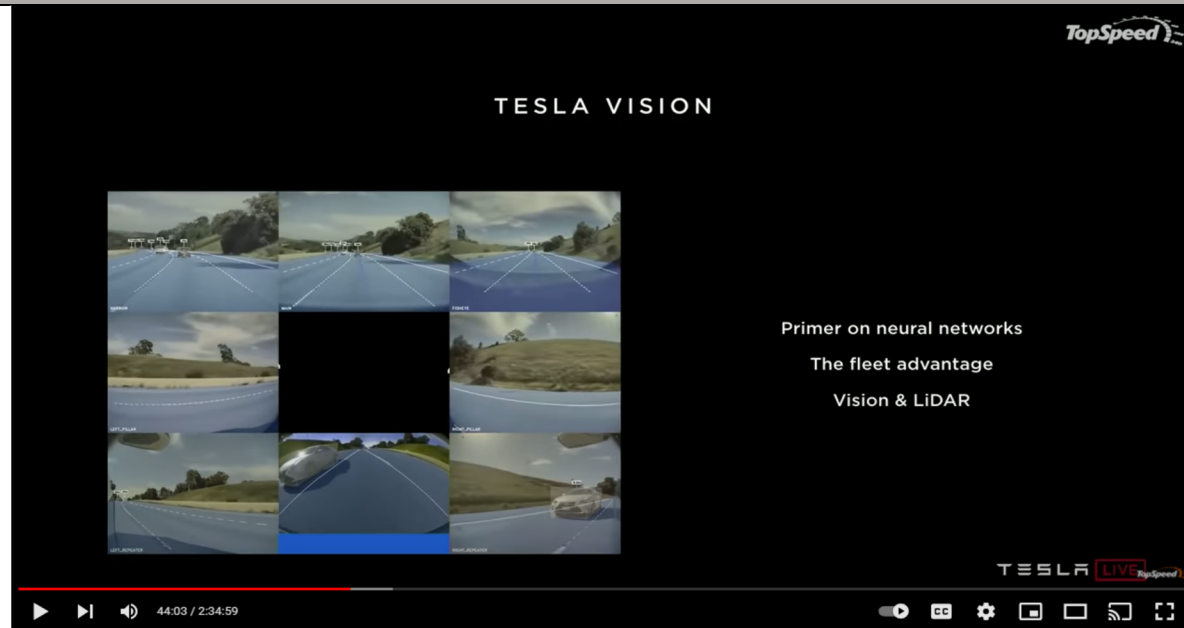


1. A camera is mounted above the rear license plate.
2. Ultrasonic sensors (if equipped) are located in the front and rear bumpers.
3. A camera is mounted in each door pillar.
4. Three cameras are mounted to the windshield above the rear view mirror.
5. A camera is mounted to each front fender.
6. Radar (if equipped) is mounted behind the front bumper.

Model Y is also equipped with high precision electronically-assisted braking and steering systems.

See [https://www.tesla.com/ownersmanual/modely/en\\_us/GUID-EDA77281-42DC-4618-98A9-CC62378E0EC2.html](https://www.tesla.com/ownersmanual/modely/en_us/GUID-EDA77281-42DC-4618-98A9-CC62378E0EC2.html)

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See also Tesla Autonomy Day 2019 video, available at <https://www.youtube.com/watch?v=-b041NXGPZ8> at 44:00 (a stream of videos from eight cameras [the claimed “digital pictures from an optical camera”] across the vehicle used to make a lane change).

[17C] (c)  
anticipating  
the first one  
or more  
instruction  
sets for  
operating the  
first physical  
device based  
on at least  
partial match

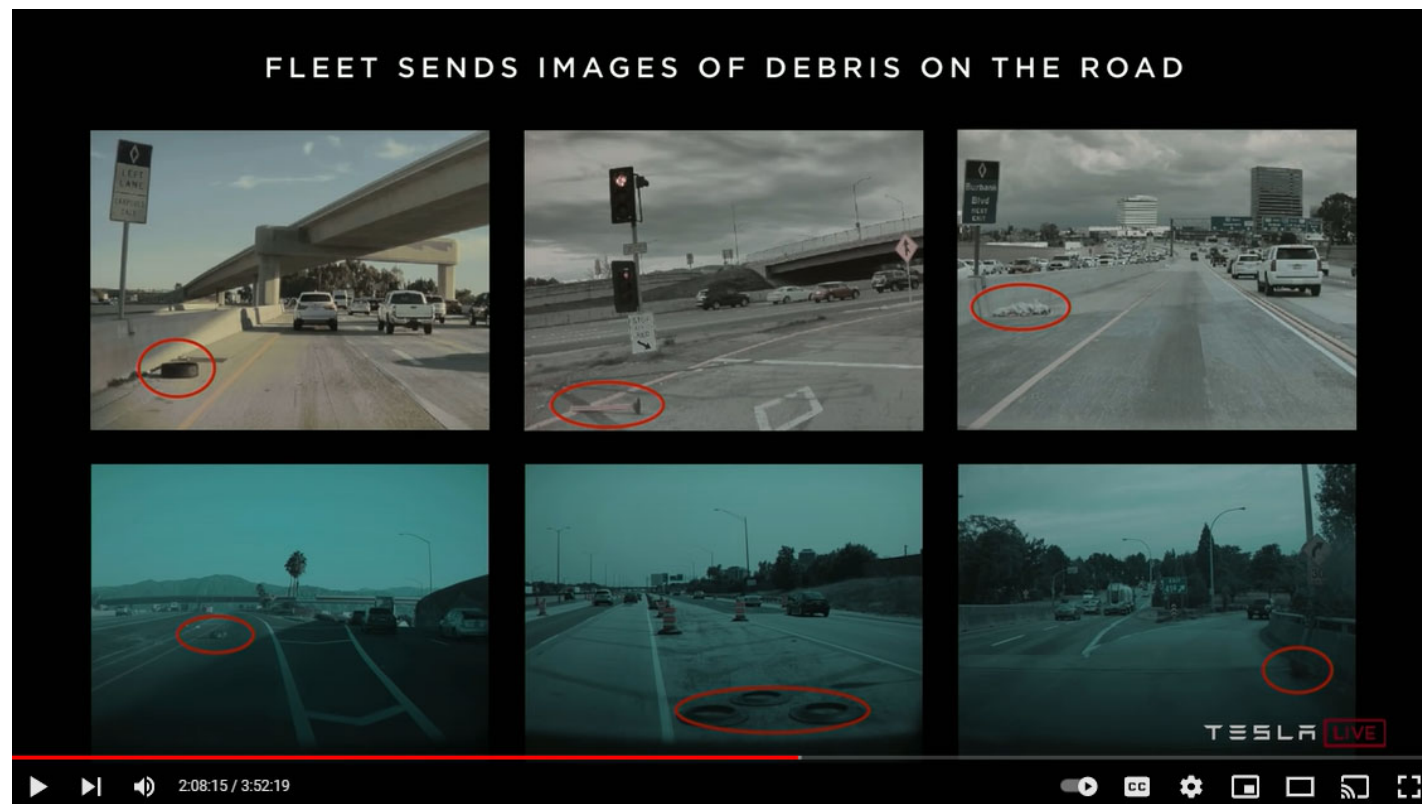
The Tesla vehicle includes a processing circuit that can (c) anticipate the first one or more instruction sets for operating the first physical device based on at least partial match between the new one or more digital pictures and the first one or more digital pictures, wherein the anticipating of (c) includes at least one of: determining that a number of at least partially matching portions of the new one or more digital pictures and portions of the first one or more digital pictures exceeds a threshold number, or determining that a percentage of at least partially matching portions of the new one or more digital pictures and portions of the first one or more digital pictures exceeds a threshold percentage, the anticipating of (c) performed by the one or more processor circuits.

For example, the processor of a Tesla vehicle anticipates a set of driving instructions (i.e. instructions for applying the breaks or turning the wheel so the debris in the road is not hit; the claimed “first one or more instruction sets”) based on similarity (the claimed “at least partial match”) between the first circumstance representation (i.e. picture of debris on the

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between the new one or more digital pictures and the first one or more digital pictures, wherein the anticipating of (c) includes at least one of: determining that a number of at least partially matching portions of the new one or more digital pictures and portions of the first one or more digital pictures exceeds a threshold number, or determining

road, etc. as previously learned on a Tesla vehicle) and a second picture (i.e. picture of a different piece of debris as currently captured by the sensors of another Tesla vehicle). Therefore, Tesla vehicles anticipate previously learned driving instructions based on threshold similarity between the different pictures.



See Tesla AI Day 2019, available at <https://www.youtube.com/watch?v=Ucp0TTmvqOE>

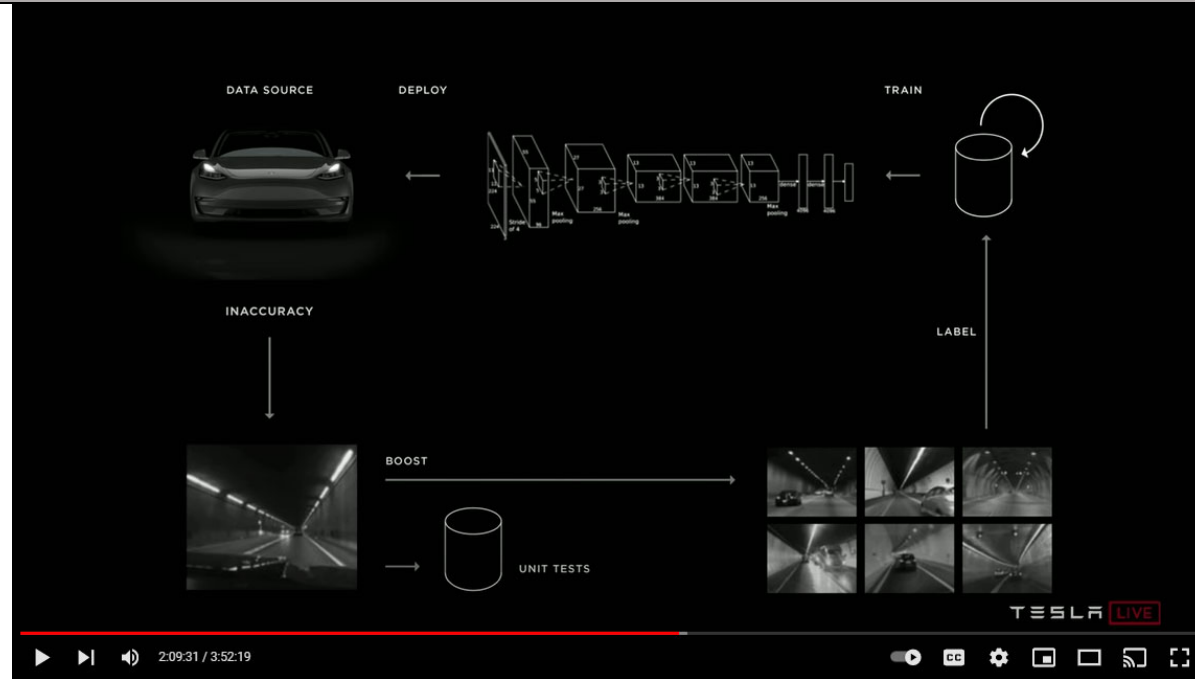
Each Tesla vehicle is taught by the collection of data from across the Fleet.



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that a percentage of at least partially matching portions of the new one or more digital pictures and portions of the first one or more digital pictures exceeds a threshold percentage, the anticipating of (c) performed by the one or more processor circuits;	
[17D] (d) executing the first one or more	The Tesla vehicle can (d) execute the first one or more instruction sets for operating the first physical device, the executing of (d) performed by the one or more processor circuits or by another one or more processor circuits in response to the anticipating of (c). The discussion and evidence cited in claims [17C] is incorporated herein.

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instruction sets for operating the first physical device, the executing of (d) performed by the one or more processor circuits or by another one or more processor circuits in response to the anticipating of (c); and	<p>For example, the processor of a Tesla vehicle (<b>the claimed “first physical device” or “second physical device” in the following limitation</b>) executes, at least in response to the anticipating the previously learned set of driving instructions (<b>the claimed “first one or more instruction sets for operating the first physical device”</b>) so that a vehicle (<b>the claimed “first” or “second physical device”</b>) can drive autonomously based on the driving instructions learned on the first Tesla vehicle (<b>the claimed “first physical device”</b>).</p> <p>For instance, memory of the second Tesla vehicle stores digital pictures (e.g., debris in the road) correlated with a set of driving instructions (e.g., instructions for turning the wheel to safely so that the debris is not hit; <b>the claimed “first one or more instruction sets”</b>) that have previously been learned on a first Tesla vehicle (<b>the claimed “first physical device”</b>) and have been transferred to other Tesla vehicles (<b>the claimed “first” or “second physical device”</b>) via the vehicle over-the-air (OTA) software update. In response to determining that a new digital image (e.g., representation of different debris currently in front the vehicle), is similar to (<b>the claimed “at least partial match”</b>) the previously learned digital images (e.g., representation of a pedestrian previously in front the vehicle, representation of previously surrounding vehicles in a lane change situation, representation of a previous intersection in a left turn situation, etc.), the processor of the Tesla vehicle (<b>the claimed “first” or “second device”</b>) causes the previously learned driving instruction (e.g., instructions for avoiding the debris) to be executed.</p>

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*See Tesla AI Day 2019, available at <https://www.youtube.com/watch?v=Ucp0TTmvqOE>*

[17E] (e)  
autonomously  
performing,  
by the first  
physical  
device or by a  
second  
physical

The Tesla Vehicle can (e) autonomously perform, by the first physical device or by a second physical device, one or more operations defined by the first one or more instruction sets for operating the first physical device. The discussion and evidence cited in claims [17C-D] is incorporated herein.

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device, one or more operations defined by the first one or more instruction sets for operating the first physical device.	